Summer 2002
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Weather Bulletin

Inside this issue:

Summer Heat

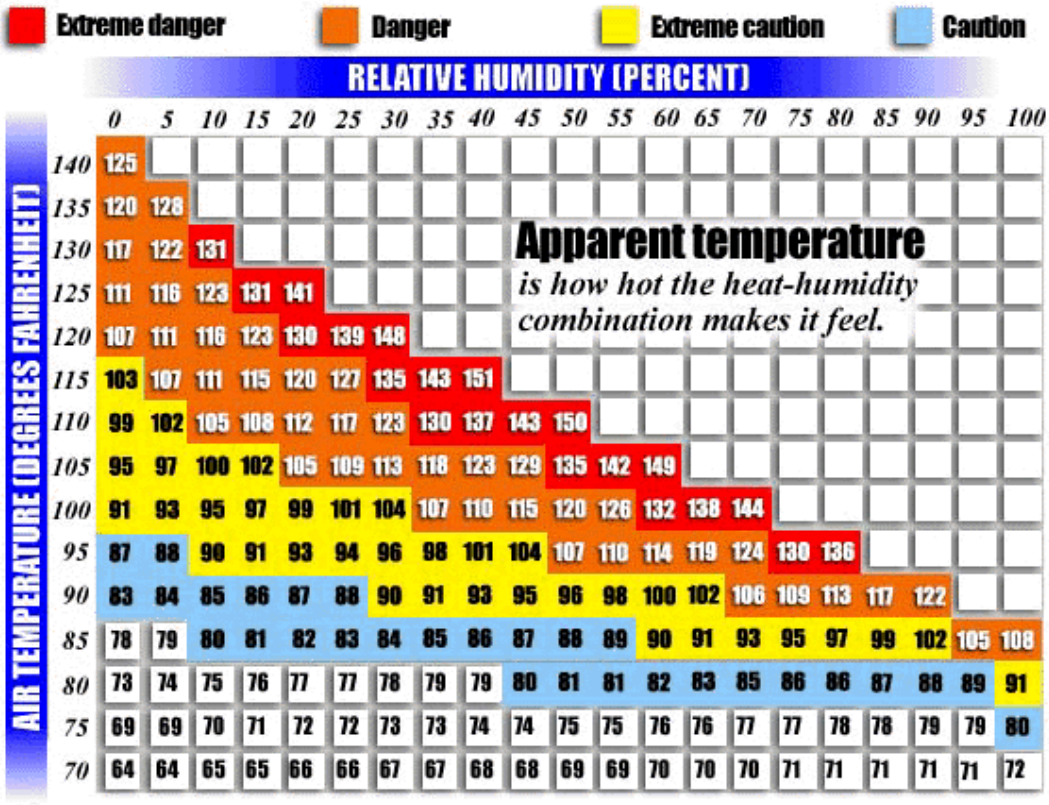
From 1936 through 1975, nearly twenty thousand people in the U.S were killed by excessive heat.

To mitigate this loss of life and better communicate the effects of heat and humidity on the human body, the National Weather Service calculates a "heat index". Heat index is given in degrees Fahrenheit, and is used to describe how hot the air actually *feels*, when the temperature is combined with the effects of relative humidity.

To use the graph below, locate the air temperature along the left side of the table, and then follow that row to the right until it intersects with the column corresponding to the relative humidity value that's given along the top of the table. For instance, if the temperature is 95°, and the relative humidity is 55%, then the heat index works out to be 110°. Thus, it *feels* like 110° outside.

Keep in mind that these values were devised for shady conditions with a light breeze. If you are in full sunshine with no breeze, you may need to add as much as 15° to the value indicated.

For detailed information on the danger of heat, see http://weather.noaa.gov/weather/hwave.html.



Hazardous Weather Outlook

The products formerly known as "Severe Weather Outlook" and "Winter Weather Outlook" have been combined into one product known as the "Hazardous Weather Outlook (HWO)".

The HWO, which is available via our webpage by clicking on "Our Hazardous Weather Outlook" in the upper left-hand corner of the Quick Click Severe Weather Menu on the main page, is an event driven all-season product.

The HWO is issued when:

- An advisory, watch, or warning is in effect
- Conditions are forecast that will likely result in the issuance of an advisory, watch, or warning
- Thunderstorms are expected within 24 hours
- The Storm Prediction Center has the area outlooked for severe weather that day (and occasionally the next day)

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HAZARDOUS WEATHER OUTLOOK
NATIONAL WEATHER SERVICE NORTHERN INDIANA
500 AM EST THU APR 18 2002

...SEVERE THUNDERSTORMS ARE POSSIBLE TONIGHT...

A STRONG COLD FRONT WILL MOVE INTO THE REGION TONIGHT AND TRIG-
GER THUNDERSTORMS. SOME STORMS MAY BECOME SEVERE OVERNIGHT
ACROSS FAR NORTHWEST OHIO...MUCH OF NORTHERN INDIANA AND EXTREME
SOUTHWEST LOWER MICHIGAN. THE PRIMARY THREATS FROM THESE STORMS
ARE LARGE HAIL AND DAMAGING WINDS.

SPOTTER ACTIVITATION MAY BE NEEDED TONIGHT.

STAY TUNED TO NOAA WEATHER RADIO AND OTHER LOCAL MEDIA FOR FUR-
THER DETAILS OR UPDATES.

FOR ADDITIONAL WEATHER INFORMATION, CHECK OUR WEB SITE AT
HTTP://WWW.CRH.NOAA.GOV/IWX
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NWS IWX Participates in Adopt-A-Highway

The Adopt-A-Highway program, organized by the Indiana Department of Transportation, serves to keep Indiana's highways cleaner and more attractive. The Northern Indiana NWS office is proud to be a participant in this program, removing trash from a two-mile stretch of Indiana Route 13 near the office four times a year. If you drive by sometime and see us cleaning up the right-of-way, be sure to give us a wave!

NWR Voices

One of the most important goals of the National Weather Service is to effectively disseminate products and services that enhance public safety and the economic productivity of the nation. An objective which supports this goal is improving accessibility and timeliness of weather information to communities. Improving the voice used on NOAA Weather Radio (NWR) will help us meet this objective.
An exciting new feature of the new voice technology is that we now have two different voices, instead of just one. This helps to break up the monotony of the broadcast and make the presentation more pleasant to listen to. There is a male voice (Craig), and a female voice (Donna). Weather offices are strongly encouraged to use both voices, with the male voice for some products and the female voice for others. Which products get which voice will be largely dependent on what our customers want (that's you!). For instance, mariners have repeatedly stated a preference for Donna's voice,

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Lowden Honored

Contributed by Terry Click

NOAA and the National Weather Service honored Steuben County Communications Director Kenneth D. Lowden as a 2002 recipient of the agency's Mark Trail NOAA Weather Radio Award. Lowden, of Angola, was honored for his dedicated efforts to bring NOAA Weather Radio coverage to Steuben County residents, as well as the rest of the northeast corner of Indiana, the northwest corner of Ohio, and extreme southern Michigan. Lowden received the award April 17 from Brigadier General Jack Kelly (retired), Director of the National Weather Service, at the Cannon House Office Building in Washington, D.C.

Lowden was one of 15 individual and organizational award recipients nationwide selected for the 2002 Mark Trail Award. All award recipients contributed to the visibility and accessibility of NOAA Weather Radio. Lowden convinced the Steuben County Industrial Guild to help raise funds for a NOAA Weather Radio transmitter and was instrumental in acquiring sufficient funds, building

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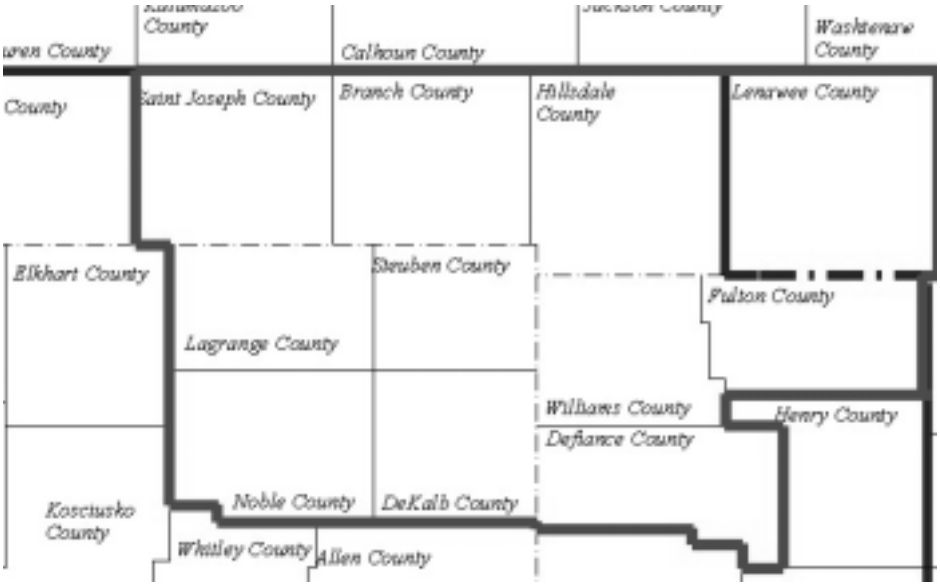
Lenawee County on Angola NWR

Lenawee County in southeast Michigan is now a part of the Angola NOAA Weather Radio broadcast area. Severe thunderstorm watches and warnings, tornado watches and warnings, and flash flood warnings for Lenawee County will now be sent over the Angola NWS transmitter (with all appropriate tones and codes). Also, the weather observation from Adrian has been added to the hourly round-up. Otherwise, the Angola broadcast will remain unchanged.

The Lenawee County Emergency Coordinator did field tests and found

Continued at "Lenawee" on page 9



A new river gauge has been installed in northern Miami County on the Eel River at Denver.

Lenawee County

- Pop. 101,000
- County Seat: Adrian
- Area: 751 sq. mi.
- Ave. Temp: 46.8°
- Annual Precip: 31"
- Annual Snow: 49"
- Home to two state parks, two colleges, and a state recreation area

The Angola NWR transmitter covers portions of three states, including Lenawee County, Michigan.

Swartzendruber Recognized

Contributed by Pat Murphy

On April 22, 2002, distinguished volunteers from across the nation received the National Oceanic and Atmospheric Administration's Environmental Hero Award. Held in conjunction with Earth Day celebrations, the ceremony honored NOAA volunteers for their "tireless efforts to preserve and protect our nation's environment." "Their very important contributions are working to build a proud legacy for generations to come," said Vice Admiral Conrad C. Lautenbacher, Jr., USN (retired), Under Secretary of Commerce for Oceans and Atmosphere and NOAA administrator. "I hope they encourage others in the community to follow their fine example. America needs many more Environmental Heroes of this caliber." Mike Sabones, Meteorologist-in-Charge, and Steve Eddy, Warning Coordination Meteorologist, presented the award and extended their congratulations to Mr. Sandy Swartzendruber, W9JOE, at an award ceremony held at the Goshen Amateur Radio Club meeting on May 14, 2002. Swartzendruber has been a dedicated Skywarn organizer and supporter for many years, helping to organize a volunteer storm warning network of amateur ham radio operators in northern Indiana, southern Michigan, and northwest Ohio. "It gives me great pleasure presenting this award to a very deserving community activist. Sandy exhibits extraordinary professionalism in his volunteer service at our amateur radio station,

Continued on next page...

F-Scale

Broken tree branches and only superficial house damage. The great majority of tornadoes are F0. "Straight-line" winds can be much stronger than an F0 twister.

This wood-frame house was pushed bodily off its concrete block foundation The house had no bottom anchoring at all. It was simply resting on its foundation.

The roof and one large outer wall segment of this home came off; while the remaining inner and outer walls were left (barely) standing.

All but a few parts of the outer and inner walls were toppled or removed from this house. For a *well-built* home, any removal of inner walls constitutes F3 damage.

A tornado demolished this house (foreground) down to a short pile of debris on and around the foundation, with no walls standing.

The tornado leveled this house, swept the foundation clean, shredded the house remains into small pieces, and scattered the debris downwind.

After a particularly bad storm, NWS survey teams will visit the affected areas and assess the damage. In the case of tornadoes, an F-Scale number will be assigned.

Adapted from http://www.spc.noaa.gov/faq/tornado/f-scale.html

Advanced Weather Spotter Course

Quadrant 4 of Indiana-Michigan-Ohio (IMO) Skywarn is in the early planning stages of hosting an Advanced Weather Spotter Course. Advanced spotter courses are designed to enhance the knowledge of experienced spotters who desire more knowledge about severe thunderstorm structure and spotting.

The course will be a day-long training session featuring multiple speakers on a variety of subjects, all related to spotting and reporting severe weather. Dr. Charles Doswell, a senior research scientist at the Cooperative Institute for Mesoscale Meteorological Studies at the University of Oklahoma, will be a featured speaker.

Dr. Dave Arnold, assistant professor of climate and forecasting at Ball State University, is also tentatively scheduled to appear.

The course is planned to be held at Elkhart Central High School on Saturday, March 15, 2003. The pre-registration cost is expected to be $25, and the

Continued at "Spotter" on page 9

Steve Eddy, Warning Coordination Meteorologist at IWX, met with customers at the 51st Annual Dayton Hamvention in Dayton, Ohio, on May 17, 2002. It was estimated that 37,000 people attended that day.

Swartzendruber Recognized, continued...

WX9IWX, during severe weather. He ensures that new radio operators receive proper training to be proficient in severe weather operations", said Mike Sabones. Steve Eddy added that "Sandy's actions mirror NOAA National Weather Service's primary mission to protect lives."

Established in 1995 to commemorate the 25th anniversary of Earth Day, the Environmental Hero award is presented to individuals and organizations that volunteer their time and energy to help NOAA. Previous recipients include oceanographers Jean-Michel Cousteau and Sylvia Earle, and actor Ted Danson, head of the American Oceans Campaign.

Swartzendruber was inspired to begin his involvement in reporting severe weather by the 1965 Palm Sunday tornado outbreak that devastated northern Indiana, including the area around his father's home. When the National Weather Service established the new forecast office between Syracuse and North Webster, he focused his communication skills and leadership on

Cont'd at "Swartzendruber" on page 9

Present at the awards ceremony, left to right, included Northern Indiana Warning Coordination Meteorologist Steve Eddy, Northern Indiana Meteorologist in Charge Mike Sabones, and the guest of honor Sandy Swartzendruber...in addition to an appreciative audience.

County Visit Program

Contributed by Mike Skipper

The NWS office in Northern Indiana (IWX) is beginning a County Visit program this year to serve its 37 counties in northern Indiana, northwest Ohio, and southern Michigan. IWX volunteers adopt a county by meeting emergency managers, 911 operators, media, and others, in order to put a face to a name. Customers have a chance to receive individualized help with spotter training and assistance with outreach programs such as *StormReady*. Customers also have a chance to become familiar with the many products and services our office provides. They can ask questions, voice concerns, and have a person at this office they can ask for by name. In turn, IWX employees

Continued at "Visit" on page 9

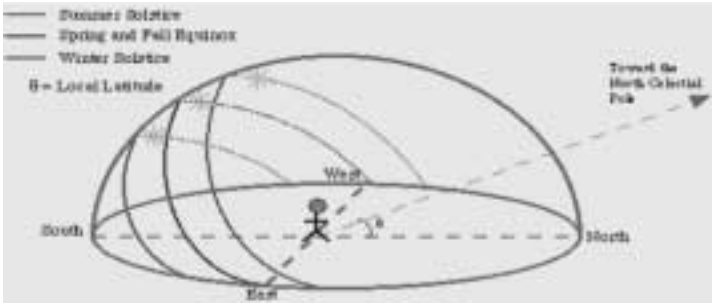
The Summer Solstice

Contributed by Michael Scotten

This year, the summer solstice will mark the beginning of summer in the Northern Hemisphere on June 21 at 8:24 A.M. EST (9:24 A.M. EDT). Not only will the summer solstice note the beginning of summer, it will also signify the longest day of the year. This means that the length of time elapsed between sunrise and sunset on June 21 will be a maximum for the year 2002 at locations north of the equator. The reason June 21 will be the longest day in the Northern Hemisphere this year is that the sun will not exactly rise in the east and set in the west on this date. The sun will actually rise in the northeast and set to the northwest, allowing it to be in the sky a longer period of time. This also means that June 21 will have the shortest night as well. In northern Indiana, northwest Ohio, and extreme southwest lower Michigan, June 21 will have around 15 hours of daylight and nine hours of nighttime. In parts of northern Alaska and Canada, areas will receive 24 hours of daylight a day for several days, even weeks in a row during June, around the date of the Northern Hemisphere's summer solstice! The word **solstice** means "*sun stands still*" in Latin. For several days before and after each solstice (summer and winter), the sun appears to stand still in the sky in the middle part of the day, which means its highest (near noontime) elevation does not seem to change from day to day. On the day of the Northern Hemisphere's summer solstice, the sun is farthest north of the equator, directly overhead around noon at the Tropic of Cancer (23.5° North of the equator). The reason for this is that the North Pole is tilted closest to the sun on the day of the Northern Hemisphere's summer solstice. As a result, the sun's rays hit the northern half of the world most directly on this date. Even though the sun's rays hit the northern half of the earth most directly on the day of the summer solstice, it still takes time to warm the earth and the atmosphere, delaying the hottest summer weather about a month into mid and late July. An interesting thing to note is that on the day of the Northern Hemisphere's summer solstice, the sun is actually the farthest away from earth, making you think that the earth should be the coldest of the year. However, it is the direction of tilt of the poles that plays a much bigger role in determining temperature.

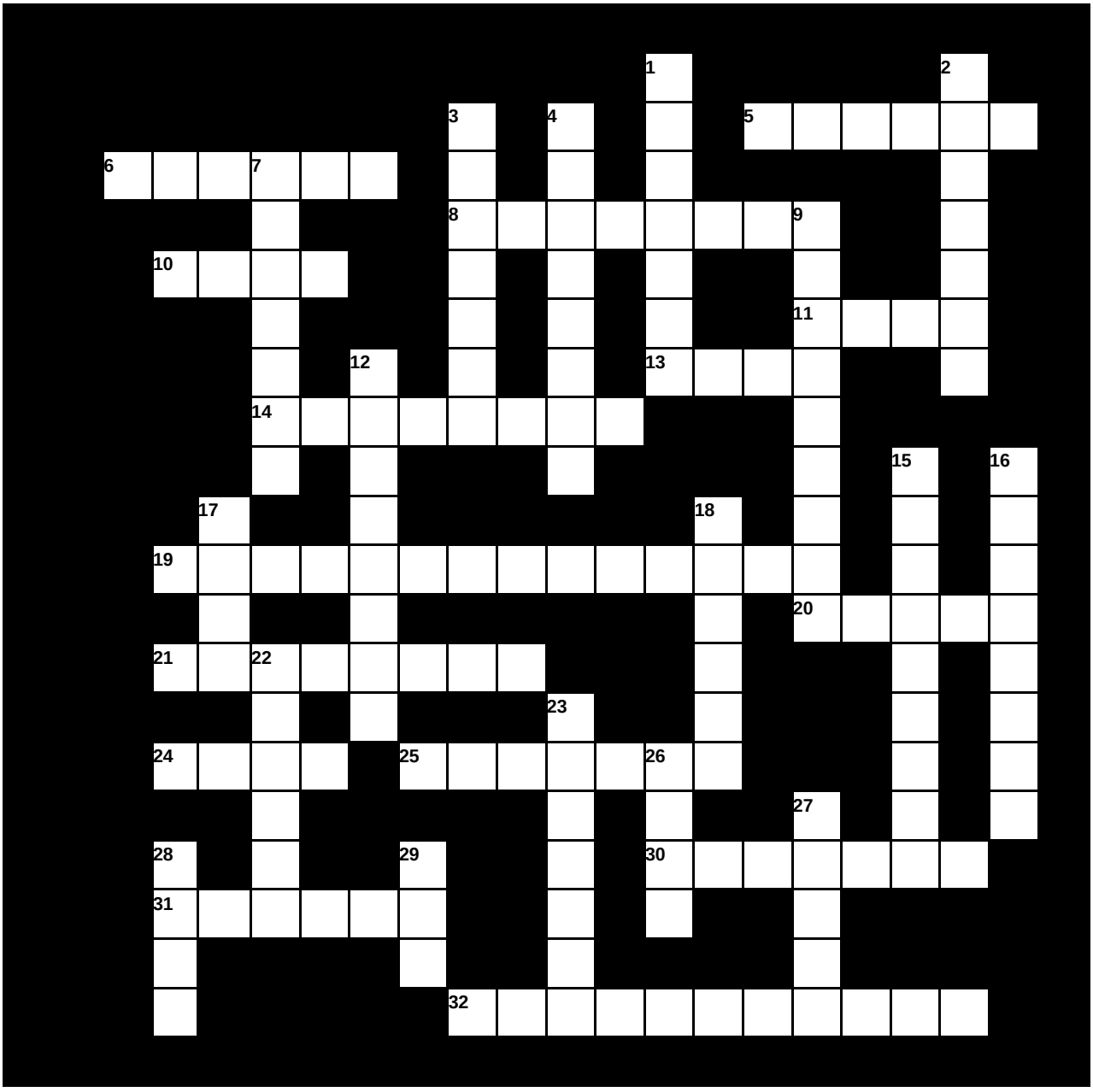
While we will be enjoying our summer solstice in the Northern Hemisphere on June 21 this year, people will be experiencing the winter solstice in the Southern Hemisphere. Winter will begin on June 21 this year south of the equator. This date will mark the shortest day and longest night of the year across South America, southern Africa, Australia, and Antarctica. When

Continued at "Solstice" on page 9

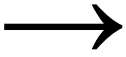


This illustration shows the different sun angles and paths during the soltices and equinoxes.

Summer Solstice Crossword Puzzle



Clues are on Page 8
Answers are on Page 10



Summer Solstice Crossword Clues

- Near the time of the summer solstice, the sun's ___1___ (near ___12___) elevation does not seem to change.

- On ___21___ 21, 2002, the ___2___ will happen as the ___8___ Hemisphere will experience the ___18___ Solstice, and the Southern Hemisphere will experience the summer solstice.

- The summer solstice signifies the ___3___ ___29___ of the year, and the ___14___ ___27___.

- The sun is actually the ___4___ away from the ___20___ during the ___8___ hemisphere's summer solstice, making you think that the ___32___ should be the ___7___ of the year.

- On ___17___ 21, the length of time elapsed between sunrise and ___5___ will be a ___23___ for the year 2002 in locations north of the ___25___.

- The sun will be directly overhead at ___12___ at the tropic of ___6___ on the ___29___ of the ___8___ Hemisphere's summer solstice.

- Even though the sun's ___11___ will hit the ___8___ half of the ___20___ most directly on ___17___ 21, it will take time to ___28___ the atmosphere, delaying the hottest summer weather over a month into late ___10___ and early August.

- It is the direction of ___13___ of the poles that plays a much bigger role in determining ___32___.

- The sun will be directly overhead around ___12___ at the tropic of ___15___ on the ___29___ of the southern Hemisphere's summer solstice.

- In ___8___ ___30___, northwest ___26___, and extreme southwest lower ___16___ , ___17___ 21 will have around 15 hours of ___29___ and ___24___ hours of ___27___.

- The word **solstice** means "___19___" in Latin.

- In ___8___ parts of ___31___ and ___22___, areas will receive 24 hours of daylight a ___29___ on ___17___ 21.

- The ___9___ will be tilted closest to the sun on ___17___ 21 .

NWR Voices

Continued from page 2...

because it is more easily heard over engine noise. Others have asserted that the male voice is best for severe weather warnings and watches. If you have any thoughts on which voice should be used for which type of information (e.g., severe weather, marine information, the hourly round-up, the forecast, etcetera), please let us know! Also, please alert us if you hear the voices mispronouncing words...especially place names.

Even with the new voices, you may still occasionally hear the old voice. Weather offices are encouraged to break in the new voices gradually, using them only for one or two products at first, and then for more and more products over time. Also, if the NWR receives a product that the new voices cannot process, then NWR will revert back to the old voice to read the product.

For more information, see http://www.nws.noaa.gov/nwr/newvoice.htm and http://www.nws.noaa.gov/nwr/VIPstatus.htm.

HWO

Continued from page 2...

The HWO describes the expected weather conditions in general terms, avoiding the mention of specific advisory, watch, or warning information. Instead, it is a discussion of what weather is expected, and why it is expected.

When required, the HWO is issued between 5:00 a.m. and 7:00 a.m. EST. If the weather situation is changing or is particularly volatile, a HWO may be issued at any time...especially around noon, and mid-afternoon.

Lowden

Continued from page 3...

materials and tower space for the transmitter. In addition to donating his own physical labor to digging and filling ditches, installing siding, and painting; Lowden attended numerous meetings of community associations, town councils, and planning commissions. With the acquisition of the transmitter assured, Lowden turned his attention to raising funds to buy Weather Radio receivers for discount purchase by county residents and donation to schools, hospitals, nursing homes, etc. Congratulations Kenneth Lowden!

Lenawee

Continued from page 3...

the Angola signal to be strong in much of the county. Also, the NWS received many requests from listeners asking that Lenawee County be added to the Angola NWR coverage area. Lenawee County will continue to be covered by the Detroit transmitter as well. The Toledo transmitter is audible in southeast parts of the county.

Visit

Continued from page 6...

see how NWS products are used outside the office. Input from the field improves our service and corrects any deficiencies.

Spotter

Continued from page 5...

fee at the door will likely be $30. The fee will include a mid-morning snack break and mid-afternoon snack break, as well as lunch at Nelson's (a local favorite). Proceeds from the registration fees will go toward funding IMO Skywarn.

By early June advertisements for the course will appear on our website. We plan to have an electronic registration form at the website, as well as a regular mailing address.

We hope to see you there!

Solstice

Continued from page 6...

December 21, 2002 comes around, the reverse will happen as the Northern Hemisphere will be experiencing the winter solstice and the start of winter, while the Southern Hemisphere will experience the summer solstice and the beginning of summer. By then, the sun will be the farthest south of the equator, directly overhead around noon at the Tropic of Capricorn (23.5° South of the equator).

Swartzendruber Honored

Continued from page 5...

moving Skywarn and amateur radio operations to the new location.
Swartzendruber has been an active participant and leader in supporting the National Weather Service efforts to warn the public of severe weather. He is currently vice-president of Indiana-Michigan-Ohio (IMO) Skywarn, president of Goshen Amateur Radio Club, and Chairman of Elkhart County Skywarn.
"Sandy Swartzendruber is a perfect example of the kind of person the National Weather Service can't do without," said Patrick Murphy, lead forecaster at the Northern Indiana Weather Forecast Office, who nominated Swartzendruber for the award.
"On behalf of the 12,500 men and women working at NOAA, I am pleased to present you with this 2002 Environmental Hero Award," Lautenbacher wrote in a letter to the recipients. "This award recognizes your dedicated efforts and outstanding accomplishments to benefit the environment and make our nation a better place for all Americans."
NOAA is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and providing environmental stewardship of our nation's coastal and marine resources.

Summer Solstice Crossword Puzzle Answers